

Nonparametric Econometric Methods

Course title - Intitulé du cours	UE3: Nonparametric Econometric Methods
Level / Semester - Niveau /semestre	M2 / S3
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	DAOUIA ABDELAATI
Other teacher(s) - Autre(s) enseignant(s)	ABBAS YASSER
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
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Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	15
TA Hours - Volume horaire TD	6
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

E-mail: yasser.abbas@tse-fr.eu, TSE

E-mail: Abdelaati.daouia@tse-fr.eu, TSE

Office number: T234 (Y. Abbas), T216 (A. Daouia)

Office Hours: by appointment

Preferred means of interaction: after lectures, by email

Course's Objectives - Objectifs du cours :

This course is the first half of an advanced topics course in Econometrics. It is designed to introduce flexible methods of estimation that do not rely on strong assumptions about functional forms and distributions of random variables in econometric models. The course provides a modern view of the most popular nonparametric methods, especially on the important topics of density and regression estimation. It will focus on studying the statistical properties of the estimators although the proofs will be skipped. We will spend more time on cultural aspects (knowledge of the methodology and interpretation of statistical results) and computational aspects (implementation using R software). The course will take place in a computer room so that we can illustrate immediately the ideas covered in lecture through simulated and real datasets. The objective of the course is that students should be able to evaluate the merits and drawbacks of the nonparametric estimators and assess where they can merit from applying such methods. They should also be able to apply the estimation methods to some simple datasets.

Course outline :

- 1st course (A. Daouia), September 19 (14:00 - 17:00) : Parametric versus nonparametric models, Nonparametric density estimation
- 2nd course (A. Daouia), September 26 (14:00 - 17:00) : Nonparametric density estimation
- 1st TD (Y. Abbas), September 29 (14:00 - 15:30) : Estimation of density functions
- 3rd course (A. Daouia), October 3 (14:00 - 17:00) : Nonparametric density estimation, Review of polynomial spline functions
- 2nd TD (Y. Abbas), October 6 (14:00 - 15:30) : Density estimation, Smoothing splines
- 4th course (A. Daouia), October 10 (14:00 - 17:00) : Nonparametric regression estimation
- 3rd TD (Y. Abbas), October 13 (14:00 - 15:30) : Polynomial vs local polynomial regression on simulated and real data
- 5th course (A. Daouia), October 17 (14:00 - 17:00) : Nonparametric regression estimation
- 4th TD (Y. Abbas), October 20 (14:00 - 15:30) : Least squares splines, spline smoothing

Prerequisites - Pré requis :

Prerequisite is Mathematical Statistics (M1) or Intermediate Econometrics (M1). The main concepts that students should be familiar with are methods of estimation (e.g. MLE) and their properties. A basic programming skill in R is required.

Grading system - Modalités d'évaluation :

One final exam (50%), one project (50%). The objectives of the project are to enable the students to explore other related topics in nonparametric econometrics that have not been addressed for lack of time and to learn them how to make a little bibliography by themselves because they will need it in the company. Late submission requests will not be entertained.

Bibliography/references - Bibliographie/références :

Lecture slides will be given all along the course. There will also be supplementary notes where required. No textbook is officially required. A list of references and recommended readings will be provided in class.